

In re Patent Application of
STORM ET AL.
Serial No. **Not Yet Assigned**
Filed: **Herewith**

In the Claims:

Claims 1-13 (Cancelled).

14. (New) An image sensor comprising:
an array of pixels, each pixel comprising
a photodiode,
a first output circuit for deriving a
linear output signal by applying a reset signal to
said photodiode and reading a voltage on said
photodiode after an integration time, and
a second output circuit for deriving a
logarithmic output signal by reading a near
instantaneous illumination-dependent voltage on said
photodiode that is a logarithmic function of the
illumination.

15. (New) An image sensor according to Claim 14,
wherein said first output circuit comprises:
a reset switch for applying a reset voltage to said
photodiode, said reset switch comprising a reset transistor
including a conducting terminal connected to said photodiode;
and
a readout switch for turning on the conducting
terminal of said reset transistor after expiration of the
integration time.

16. (New) An image sensor according to Claim 14,
wherein said second output circuit comprises:
an amplifier; and
a log select switch for connecting said amplifier to
said photodiode.

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17. (New) An image sensor according to Claim 16, wherein said amplifier comprises a differential amplifier having an inverting input connected to the conducting terminal of said reset transistor, and a non-inverting input connected to a reference voltage.

18. (New) An image sensor according to Claim 14, further comprising a calibration circuit for calibrating each pixel before deriving the logarithmic output signal.

19. (New) An image sensor according to Claim 18, wherein said calibrating circuit comprises a constant current source selectively connected to each respective pixel.

20. (New) An image sensor according to claim 19, wherein an output node is associated with each photodiode, and wherein the linear and logarithmic output signals are derived from the output node, said calibration circuit further comprising a switch connected between said photodiode and the output node for isolating said photodiode from the output node while calibration takes place.

21. (New) An image sensor comprising:
an array of pixels, each pixel comprising
 a photodiode,
 a first output circuit connected to said
photodiode for generating an output signal to be a
linear output signal, and
 a second output circuit connected to said
photodiode for generating the output signal to be a

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logarithmic output signal.

22. (New) An image sensor according to Claim 21, wherein the linear output signal is selected if the pixel has not saturated during generation of the linear output signal, otherwise, the logarithmic output signal is selected.

23. (New) An image sensor according to Claim 21, wherein said first output circuit derives the linear output signal by applying a reset signal to said photodiode and reading a voltage on said photodiode after an integration time.

24. (New) An image sensor according to Claim 21, wherein said second output circuit derives a logarithmic output signal by reading a near instantaneous illumination-dependent voltage on the photodiode that is a logarithmic function of the illumination.

25. (New) An image sensor according to Claim 21, wherein said first output circuit comprises:

a reset switch for applying a reset voltage to said photodiode, said reset switch comprising a reset transistor including a conducting terminal connected to said photodiode; and

a readout switch for turning on the conducting terminal of said reset transistor after expiration of the integration time.

26. (New) An image sensor according to Claim 21, wherein said second output circuit comprises:

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an amplifier; and
a log select switch for connecting said amplifier to
said photodiode.

27. (New) An image sensor according to Claim 26,
wherein said amplifier comprises a differential amplifier
having an inverting input connected to the conducting terminal
of said reset transistor, and a non-inverting input connected
to a reference voltage.

28. (New) An image sensor according to Claim 21,
further comprising a calibration circuit for calibrating each
pixel before deriving the logarithmic output signal.

29. (New) An image sensor according to Claim 28,
wherein said calibrating circuit comprises a constant current
source selectively connected to each respective pixel.

30. (New) An image sensor according to Claim 29,
wherein an output node is associated with each photodiode, and
wherein the linear and logarithmic output signals are derived
from the output node, said calibration circuit further
comprising a switch connected between said photodiode and the
output node for isolating said photodiode from the output node
while calibration takes place.

31. (New) A method for operating an image sensor
comprising an array of pixels, each pixel comprising a
photodiode, the method comprising:

deriving a linear output signal from each pixel;
deriving a logarithmic output signal from each

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pixel; and

selecting the linear output signal if the pixel has not saturated during generation of the linear output signal, otherwise, selecting the logarithmic output signal.

32. (New) A method according to Claim 31, wherein deriving the linear output signal from each pixel comprises:
applying a reset voltage to the photodiode;
allowing for a predetermined integration time; and
reading an output voltage on the photodiode.

33. (New) A method according to Claim 31, wherein deriving the logarithmic output signal is based upon reading a near instantaneous illumination-dependent voltage on the photodiode that is a logarithmic function of the illumination.

34. (New) A method according to Claim 31, further comprising calibrating each pixel before generating the corresponding logarithmic output signal.

35. (New) A method according to Claim 34, wherein each pixel is calibrated by applying a constant current thereto.

36. (New) A method according to Claim 35, wherein an output node is associated with each photodiode, and wherein the linear and logarithmic outputs are generated with respect to the output node, and a calibration circuit comprising a switch is connected between the photodiode and the output node for isolating the photodiode from the output node while calibration takes place.